

# CHAPTER IV - SUMMARY OF SOUTH PACIFIC AND SOUTH INDIAN OCEAN TROPICAL CYCLONES

## 1. GENERAL

Last year (1985) was the first year that southern hemisphere tropical cyclones were included in the Annual Tropical Cyclone Report. In retrospect, the JTWC area of responsibility (AOR) was expanded on 1 October 1980 -- to include the southern hemisphere from 180 degrees Longitude westward to the east coast of Africa. Details on tropical cyclones in this region for July 1980 to June 1982 are contained in Diercks et al, (1982). For the July 1982 through June 1984 period, reference the NOCC/JTWC TECH NOTE 86-1. As in earlier reports, data on tropical cyclones forming in, or moving into, the South Pacific Ocean east of 180 degrees Longitude, which is the Naval Western Oceanography Center (NAWESTOCEANCEN) AOR, are included for completeness.

JTWC provides the sequential numbering for all South Pacific and South Indian Ocean significant tropical cyclones. The current convention (as stated

in USCINCPACINST 3140.1 (series)) for labelling tropical cyclones that develop in the South Indian Ocean (west of 135 degrees East Longitude) is to add the suffix "S" to the assigned tropical cyclone number, while those originating in the South Pacific Ocean (east of 135 degrees East Longitude) receive a "P" suffix. The "P" suffix also applies to significant tropical cyclones which form east of 180 degrees Longitude in the South Pacific Ocean. Also, it should be noted that to encompass the southern hemisphere tropical cyclone season, which occurs from January through April, the limits of each tropical cyclone year are defined as 1 July to 30 June. Thus, the 1986 southern hemisphere tropical cyclone year is from 1 July 1985 to 30 June 1986. (This is in contrast to the convention of labelling northern hemisphere tropical cyclones which is based on the calendar year - 1 January to 31 December - to include the seasonal activity from May through December.)

TABLE 4-1.

SOUTH PACIFIC AND SOUTH INDIAN OCEANS  
1986 SIGNIFICANT TROPICAL CYCLONES

TROPICAL CYCLONE	PERIOD OF WARNING	CALENDAR DAYS OF WARNING	NUMBER OF WARNINGS ISSUED	MAXIMUM SURFACE WINDS-KT (M/S)	ESTIMATED MSLP - MB	BEST TRACK DISTANCE TRAVELED NM (KM)
01S -----	23 SEP - 29 SEP	7	14	40 (21)	994	1470 (2722)
02S NICHOLAS	27 NOV - 07 DEC	11	21	75 (39)	967	1436 (2659)
03P -----	15 DEC - 16 DEC	2	3	35 (18)	997	1093 (2024)
04S DELIFININA	07 JAN - 16 JAN	10	19	110 (57)	933	1399 (2591)
05S COSTA	07 JAN - 16 JAN	10	18	70 (36)	972	1684 (3119)
06S -----	08 JAN - 10 JAN	3	5	50 (26)	987	553 (1024)
07S OPHELIA	11 JAN - 13 JAN	3	5	35 (18)	997	317 (587)
08S -----	11 JAN - 14 JAN	4	7	35 (18)	997	900 (1667)
09S HECTOR	19 JAN - 24 JAN	5	10	45 (23)	991	447 (828)
10S PANCHO	21 JAN - 22 JAN	2	3	35 (18)	990	352 (652)
11P VERNON	23 JAN - 25 JAN	2	4	50 (26)	987	901 (1669)
12P WINIFRED	29 JAN - 01 FEB	4	7	90 (46)	953	526 (974)
13S ERINESTA	31 JAN - 10 FEB	11	21	115 (59)	927	2282 (4226)
14S FILOMENA	06 FEB - 10 FEB	5	9	55 (28)	984	1020 (1889)
15P IMA	06 FEB - 14 FEB	9	18	75 (39)	967	2161 (4002)
16P JUNE	07 FEB - 09 FEB	2	5	55 (28)	984	825 (1528)
17P KELI	08 FEB - 10 FEB	3	5	45 (23)	991	1551 (2872)
18S RHONDA	19 FEB - 20 FEB	2	4	55 (28)	984	855 (1583)
19S GISTA	19 FEB - 25 FEB	6	12	85 (44)	958	1558 (2885)
20S SELWYN	23 FEB - 25 FEB	3	6	55 (28)	984	707 (1309)
21S TIFFANY	27 FEB - 01 MAR	2	4	35 (18)	997	628 (1163)
22S VICTOR	03 MAR - 09 MAR	7	13	105 (54)	938	1715 (3176)
23P LUSI	03 MAR - 08 MAR	6	12	45 (23)	991	1527 (2828)
24P ALFRED	03 MAR - 04 MAR	2	2	30 (15)	1000	1781 (3298)
24P ALFRED*	06 MAR - 09 MAR	3	7	85 (23)	991	-----
25S HONORININA	09 MAR - 16 MAR	8	16	110 (57)	933	2741 (5076)
25S HONORININA*	19 MAR - 20 MAR	2	3	35 (18)	997	-----
26S IARIMA	13 MAR - 15 MAR	3	4	35 (18)	997	317 (587)
27S JEFOTRA	26 MAR - 01 APR	7	14	105 (54)	938	2114 (3915)
28S KRISOSTOMA <sup>*</sup>	08 APR - 13 APR	5	10	75 (39)	967	1363 (2524)
29P MARTIN	10 APR - 14 APR	5	11	75 (39)	967	1401 (2595)
30P -----	16 APR - 16 APR	1	2	30 (15)	1000	760 (1408)
31S MANU	23 APR - 26 APR	4	7	70 (36)	972	546 (1011)
32S BILLY <sup>#</sup>	05 MAY - 12 MAY	8	14	95 (49)	948	1534 (2841)
33P NAMU	17 MAY - 23 MAY	6	13	85 (44)	958	1444 (2674)
1986 TOTALS:		173	328			

\* REGENERATED

<sup>\*</sup> TROPICAL CYCLONE 28S (KRISOSTOMA) WAS ALSO NAMED ALISON.

<sup>#</sup> TROPICAL CYCLONE 32S (BILLY) WAS ALSO NAMED LILA.

NOTE: NAMES OF CYCLONES GIVEN BY REGIONAL WARNING CENTERS (NANDI, BRISBANE, DARWIN, PERTH AND MAURITIUS) AND APPENDED TO JTWC WARNINGS, WHEN AVAILABLE.

## 2. SOUTH PACIFIC AND SOUTH INDIAN OCEAN TROPICAL CYCLONES

The 1986 year (1 July 1985 through 30 June 1986) was unusually active, with 33 tropical cyclones (see Table 4-1) reaching warning status. This did not exceed the total of 35 tropical cyclones for 1985 (1 July 1984 - 30 June 1985) which was the busiest year to date for JTWC. Three tropical cyclones occurred in the South Pacific, east of 165 degrees East Longitude, which is only half the long-term mean. The Australian area (105 to 165 degrees East Longitude) accounted for 16 tropical cyclones compared to the climatological mean of 10.3 - five more than normal. Fourteen tropical cyclones developed in the South Indian Ocean, which is nearly six more than the long-term mean of 8.4 cyclones (see Tables 4-2 and 4-3).

Meteorological satellite surveillance of tropical cyclones has been updating climatologies since the early 1960s. (This meteorological watch from space detects tropical cyclones that might have previously gone undetected over the conventional data sparse oceanic areas.) Thus, tropical cyclone climatologies should benefit from increased

surveillance from space in some areas, for example, the South Indian Ocean.

Caveat: Intensity estimates for southern hemisphere tropical cyclones are derived primarily from satellite imagery evaluation (Dvorak, 1984) and from intensity estimates reported by other regional centers. Only, in very rare instances are the intensity estimates based on surface observational data. Estimates of the minimum sea-level pressure are usually derived from the Atkinson and Holliday (1977) relationship between the maximum sustained one-minute surface wind and the minimum sea-level pressure (Table 4-4). This relationship has been shown to be representative for tropical cyclones in the western North Pacific and is also used by the Australian regional warning centers to provide intensity estimates. However, since these pressure estimates are usually based on wind intensities that were derived from interpretation of satellite imagery, considerable caution should be exercised when using these resultant pressure values in future tropical cyclone work.

TABLE 4-2. FREQUENCY OF CYCLONES BY MONTH AND YEAR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>(1959 - 1978)</b>													
AVERAGE*	----	----	----	0.4	1.5	3.6	6.1	5.8	4.7	2.1	0.5	----	24.7
1981	0	0	0	1	3	2	6	5	3	3	1	0	24
1982	1	0	0	1	1	3	9	4	2	3	1	0	25
1983	1	0	0	1	1	3	5	6	3	5	0	0	25
1984	1	0	0	1	2	5	5	10	4	2	0	0	30
1985	0	0	0	0	1	7	9	9	6	3	0	0	35
1986	0	0	1	0	1	1	9	9	8	4	2	0	33
<b>(1981 - 1986)</b>													
AVERAGE	0.5	0.0	0.2	0.7	1.5	3.5	7.2	7.2	4.3	3.3	0.7	0.0	28.7
CASES	3	0	1	4	9	21	43	43	26	20	4	0	172

\* (GRAY, 1979)

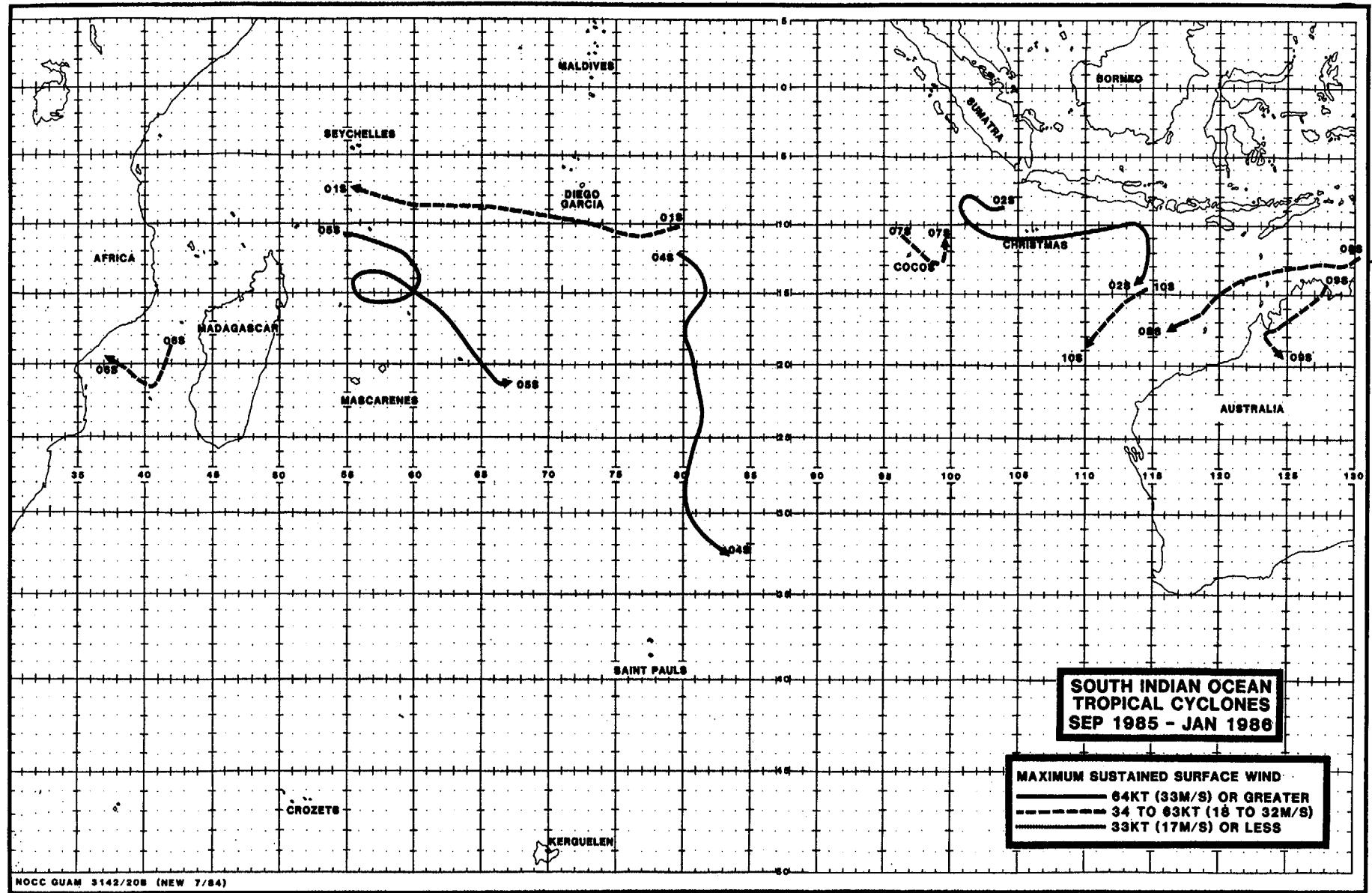
TABLE 4-3. YEARLY VARIATION OF TROPICAL CYCLONES BY OCEAN BASIN

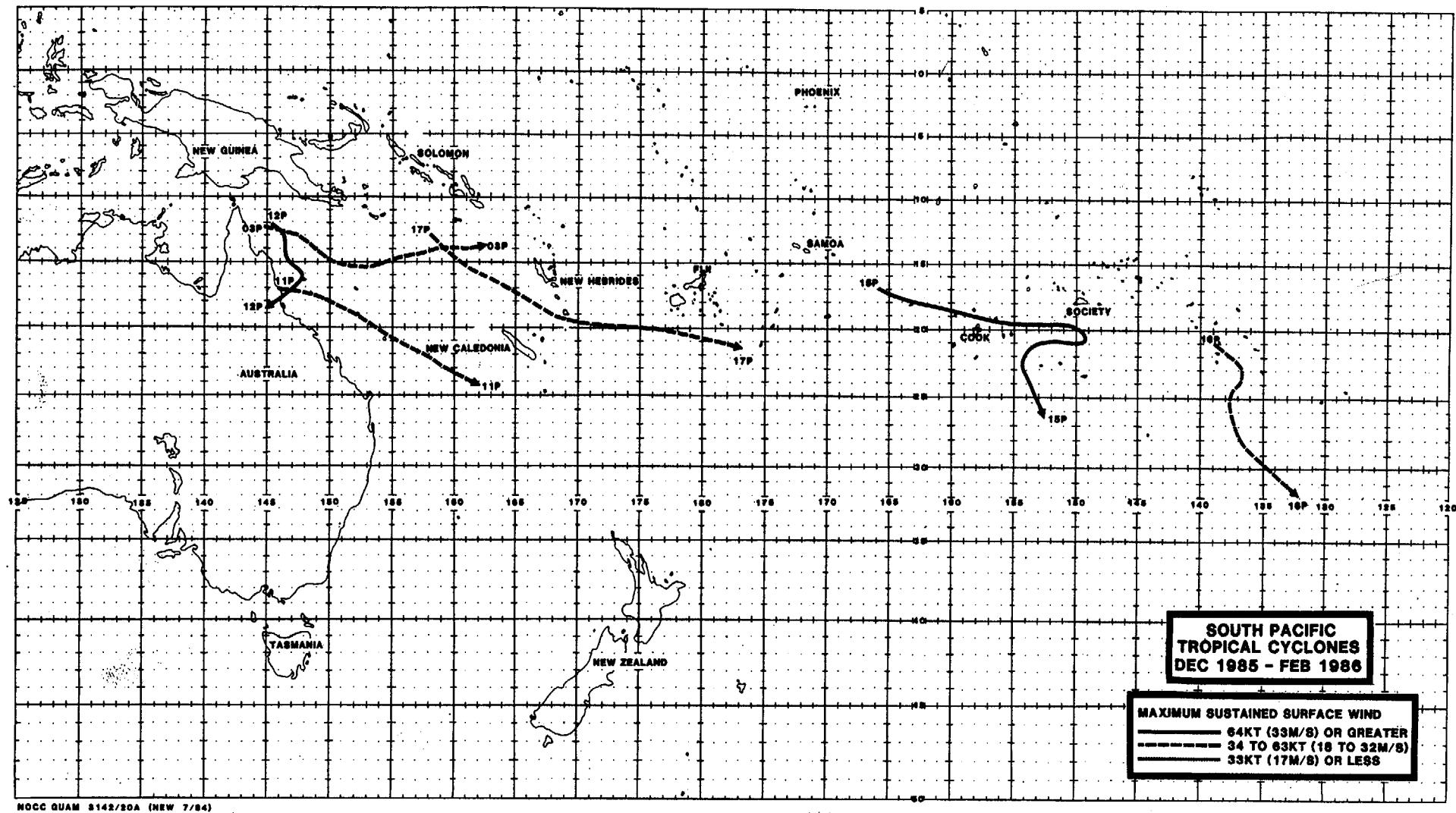
YEAR	(105E WESTWARD) SOUTH INDIAN	(105E-165E) AUSTRALIAN	(165E EASTWARD) SOUTH PACIFIC	TOTAL
<b>(1959 - 1978)</b>				
AVERAGE*	8.4	10.3	5.9	24.6
----	---	---	---	---
1981	13	8	3	24
1982	12	11	2	25
1983	7	6	12	25
1984	14	14	2	30
1985	14	15	6	35
1986	14	16	3	33
<b>(1981 - 1986)</b>				
AVERAGE	12.3	11.7	4.7	28.7
CASES	74	70	28	172

\* (GRAY, 1979)

TABLE 4-4. MAXIMUM SUSTAINED SURFACE WINDS VERSUS MINIMUM SEA-LEVEL PRESSURE (ATKINSON AND HOLLIDAY, 1977)

MAXIMUM SUSTAINED SURFACE WIND (KT)	EQUIVALENT MINIMUM SEA-LEVEL PRESSURE (MB)
30	1000
35	997
40	994
45	991
50	987
55	984
60	980
65	976
70	972
75	967
80	963
85	958
90	953
95	948
100	943
105	938
110	933
115	927
120	922
125	916
130	910
135	904
140	898
145	892
150	885
155	879
160	872
165	865
170	858





**NOCC GUAM 3142/20A (NEW 7/84)**

